Two methods are shown below for Temp MDL and AWL calcs:

Temperature Analysis (95th Percentile):

Using five years of data to calculate the lognormal performance-based limits resulted in max daily limits (MDLs) of 48.5 C and 31.8 C for Outfall 001 and the Abatement Pond, respectively. The unreasonably high limits are the result of a high CV, where the seasonal variability in temperature transposes a probable range for each sample collected. For this reason EPA used the 95th percentile value of the daily max and weekly average temperature to set the MDL and AWL.

Performance Data for Outfall 001:

MDL = **16** (95th Percentile of Daily Max)

AWL = **15** (95th Percentile of Weekly Avg)

Performance Data for the Abatement Pond:

MDL = **17** (95th Percentile of Daily Max)

AWL = **16** (95th Percentile of Weekly Avg)

Temperature Analysis (Lognormal Performance Data):

Using five years of data to calculate the lognormal performance-based limits resulted in max daily limits (MDLs) of 48.5 C and 31.8 C for Outfall 001 and the Abatement Pond, respectively. The unreasonably high limits are the result of a high CV, where the seasonal variability in temperature transposes a probable range for each sample collected. This is not reflective of the data distribution, where the temperature in summer remains relatively high, and vice versa for winter. To reflect a more representative CV, EPA used temperature collected during the critically warm season between June and September. This collected data was used to generate a more representative CV, and to set maximum daily and average weekly limits for the facility.

Seasonal Performance Data for Outfall 001:

MDL = **22**

AWL = **21** (Calculated using default multiplier of 1.5 from AML)

Using 2010-2015 data based on mean daily from June-Sept

INPUT	
LogNormal Transformed Mean:	2.5579
LogNormal Transformed Variance:	0.0490
Number of Samples per month for compliance monitoring:	20
Autocorrelation factor (n_e) (use 0 if unknown):	0
OUTPUT	
E(X) =	13.2292
V(X) =	8.790
VARn	0.0025
MEANn=	2.5812
VAR(Xn)=	0.440
Maximum Daily Effluent Limit:	**21.6**
Average Monthly Effluent Limit:	**14.3**

Performance Data for IC-11: Outfall 001

2010-2015 data based on mean daily from June-Sept		Maximum Daily Effluent Limit:	21.6
Seasonal Data Statistics		Average Monthly Effluent Limit:	14.3
Count	594		
Average	12		
95%	15.8		
std dev	2.7		
CV	0.22		

AML	x	Multiplier	=	= AWL
14.3	x	1.15	=	16
14.3	x	1.50	=	21

Using default Multiplier of 1.5

Ref: LVNFH Temp Analysis_ag.xlxs (Sheet Perform. Limit IC-11)

Seasonal Performance Data for the Abatement Pond:

MDL = **20**

AWL = **21** (Calculated using default multiplier of 1.5 from AML)

Using 2010-2015 data based on average daily from June-Sept

INPUT	
LogNormal Transformed Mean:	2.5225
LogNormal Transformed Variance:	0.0445
Number of Samples per month for compliance monitoring:	20
Autocorrelation factor (n_e) (use 0 if unknown):	0
OUTPUT	
E(X) =	12.7393
V(X) =	7.378
VARn	0.0023
MEANn=	2.5436
VAR(Xn)=	0.369
Maximum Daily Effluent Limit:	**20.3**
Average Monthly Effluent Limit:	**13.7**

Performance Data for IC-23: Abatement Pond

2010-2015 data based on mean daily from June-Sept		Maximum Daily Effluent Limit:	20.3
Seasonal Data Statistics		Average Monthly Effluent Limit:	13.7
Count	542		
Average	3		
95%	2.8		
std dev	0.2		
CV	0.08		

AML	x	Multiplier	=	= AWL
13.7	x	1.05	=	14
13.7	x	1.50	=	21

Using default Multiplier of 1.5

Ref: LVNFH Temp Analysis_ag.xlxs (Sheet Perform. Limit IC-23)

Percentile method for Phosphorus MDL and AML:

Using data collected between 2006 and 2011, the lognormal performance-based analysis resulted in max daily limits (MDLs) of 63 µg/L and 275 µg/L Total Phosphorus for Outfall 001 and the Abatement Pond, respectively. With consideration to the phosphorus TMDL of 5.7 µg/L, EPA compared the lognormal performance limits with the 95th percentile values for samples collected at each outfall. EPA determined that lognormal performance levels are not protective enough of water quality in Icicle

Creek. The 95th percentile values for samples collected at Outfall 001 and the Abatement Pond were used to determine the MDLs and AMLs for the facility.

Outfall 001 Total P 95th Percentile:

MDL = **15** (Calculated using 95th Percentile of all samples)

AML = **10** (Calculated using default multiplier of 1.5 from AML)

Outfall 001 Total P Lognormal Performance-based:

MDL = **63**

AML = **42**

INPUT	
LogNormal Transformed Mean:	1.3032
LogNormal Transformed Variance:	1.4970
Number of Samples per month for compliance monitoring:	4
Autocorrelation factor (n_e) (use 0 if unknown):	0
OUTPUT	
E(X) =	7.7811
V(X) =	210.001
VARn	0.6244
MEANn=	1.7395
VAR(Xn)=	52.500
Maximum Daily Effluent Limit:	**63.4**
Average Monthly Effluent Limit:	**20.9**
20.89182804	19.70028

Ref: LVNFH Phos Analysis_ag.xlxs

Abatement Pond Total P 95th Percentile (2006-2011):

MDL = **94** (Calculated using 95th Percentile of all samples)

AML = **105** (Calculated using default multiplier of 1.5 from AML)

Abatement Pond Total P Lognormal Performance-based:

MDL = **275**

AML = **105**

INPUT	
LogNormal Transformed Mean:	3.5242
LogNormal Transformed Variance:	0.8102
Number of Samples per month for compliance monitoring:	4
Autocorrelation factor (n_e) (use 0 if unknown):	0
OUTPUT	
E(X) =	50.8686
V(X) =	3229.995
VARn	0.2716
MEANn=	3.7934
VAR(Xn)=	807.499
Maximum Daily Effluent Limit:	**275.3**
Average Monthly Effluent Limit:	**104.7**
104.6626477	97.61375

Ref: LVNFH Phos Analysis_ag.xlxs